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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,991	12/26/2001	Anne Lafage	PHFR 000153	9234
24737	7590	11/10/2005	EXAMINER	
PHILIPS INTELLECTUAL PROPERTY & STANDARDS P.O. BOX 3001 BRIARCLIFF MANOR, NY 10510			SETH, MANAV	
			ART UNIT	PAPER NUMBER
			2625	

DATE MAILED: 11/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/032,991	LAFAGE ET AL.	
	Examiner	Art Unit	
	Manav Seth	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 31, 2005 has been entered.

Response to Amendment

2. Applicant's amendment under 37 C.F.R. 1.116, filed on August 01, 2005 has been considered and entered in full.
3. Based on applicant's amendment to claim 2, the 35 USC 112 2nd paragraph rejection on claim 2 has been withdrawn.
4. Applicant's arguments with respect to respective amended claims in pages 9 and 10 of the amendment filed August 01, 2005 have been considered but are not moot in view of the rejections made below, in view of the further consideration of the amended claims.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 1, 2 and 3 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1, 2 and 3 recites the limitation “using the Boolean values to prevent those input values designated as being non-valid from contributing to an image sample by replacing the input values designated as being invalid with at least one other input value from inside the zone in the departure space designated as being valid” and specification does not appear to teach the above cited limitation as recited in claims 1, 2 and 3. Therefore, more details are required to clearly explain the claimed invention.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miro et al, IEEE Publication, 1997, "A VLSI architecture for image geometrical transformations using an embedded core based processor", and further in view of Edirisinghe et al, IEEE Publication, 2000, "Shape Adaptive Padding for MPEG-4".

Claim 1 recites "a method of composing an image, the method comprising a step of mapping a set of image sample values from a departure space to an arrival space in accordance with a geometrical transformation, the method comprising the steps of computing a zone in the departure space by applying the inverse geometrical transformation to a zone in the arrival space covering a group of image samples". Miro discloses a VLSI architecture for image geometrical transformations using an embedded core based processor which possible has an application in MPEG4 coding schemes where the final image (2D) view will have to be rendered by compositing different natural or synthetic objects and further discloses the possibility to modify the coded object by translating, rotating, zooming or **perspective transform** (page 87, applications). Miro also teaches (page 88, lines 21-40) that each pixel in the source (departure) image has a certain coordinate (x, y) position. Miro further teaches a forward geometric transform from source image to destination image (page 88, figure 1) and also teaches that as the distribution of mapped points in the transformed image is not usually regular, the interpolation process may be complicated and may lead to images of bad quality (page 88, para. 2). Miro further provides an backward mapping, considering it easier to perform interpolation when the image is in original (source) view rather than in compressed (destination) view at destination (page 88, para. 3, figures 2 and 6). Miro discloses in figure 2 and lines 21-40 on page 88 and lines 4-7 on page 89 an inverse geometrical transformation applied to a macro-block (zone) in the destination (arrival) space where a macro-block consists of a group of image pixels (image samples) and this inverse geometric transformation results in

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computing a macro-block (zone) in the source (departure) space. **Miro does not teach of establishing a group of Boolean input values for the zone in the departure space composing the image from these Boolean input values.** But it is clear from the above disclosure by Miro that a part of destination image (possibly MPEG4 decoded as disclosed in applications before) is backward mapped and corrected, if distorted, and it is apparent that after correction it has to be fitted back to destination (arrival image). It is apparent that the processed block has an arbitrary shape and the shape and location of the processed block may vary when coded and displayed in a destination image, therefore before coding a method for preserving shape and location of the processed block is required. Techniques for processing the image at departure space (source or starting space) before coding (composing) and transmitting such as shape adaptive padding are well known in the art and is further supported by Edirisinghe.

Edirisinghe discloses “shape adaptive padding for MPEG-4” (Title). Edirisinghe further discloses Video Object Plane (page 514, right col., para. 2). Edirisinghe further discloses **“the shape information of a VOP (video object plane) is coded (as binary Alpha planes - pixels inside VOP are represented by 1’s and rest by 0’s (Boolean input values)) prior to coding motion vectors based on the VOP image window macro-block grid”** (page 514, col. 2, last para.). It is clear from the above disclosure by Edirisinghe that each pixel (image sample) inside the VOP is assigned (established) with a **Boolean value** of 1 and pixels (image samples) outside the VOP is assigned the Boolean value of 0 and shape (geometrical) information of VOP is **coded (composed)** using group of image samples (pixels) based on the established Boolean values and establishing these Boolean values will preserve shape and minimize prediction errors during image composing (coding) such that image pixels (samples) Boolean value 1 which corresponds to VOP will be considered valid and image samples (pixels) with Boolean value 0 which does not correspond to VOP will be

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considered invalid, thus representing a boolean shaped bitmap for the zone in the departure space and Boolean shaped bitmap comprised of a plurality of Boolean input values (0 and 1) and apparently every value has a coordinate position. The above disclosure satisfies the claim 1 limitation “establishing a group of input values for the zone in the departure space, the group of input values comprising Boolean values, a Boolean input value having a certain position (X_d , Y_d) in the departure space and designating the other values having the same position as being non-valid if the position is outside the set of image sample values; constructing a Boolean shaped bitmap for the zone in the departure space, the Boolean shaped bitmap comprised of a plurality of Boolean input values, each value having a certain coordinate position (X_d , Y_d) in the departure space; assigning a ‘1’ value to those coordinate positions in the Boolean shaped bitmap in the departure space corresponding to coordinate positions (X_d , Y_d) of image samples located inside the zone in the departure space and coordinate positions (X_d , Y_d) of image samples not flagged as outside by shape information; assigning a ‘0’ value to those coordinate positions in the Boolean shaped bitmap in the departure space corresponding to coordinate positions (X_d , Y_d) of image samples located outside the zone in the departure space or coordinate positions (X_d , Y_d) of image samples flagged as being outside the zone in the departure space by said shape information”.

Claim 1 further recites “composing the group of image samples in the zone of the departure space from the group of input values, using the Boolean values to prevent input values designated as being non-valid from contributing to an image sample by replacing the input values designated as being invalid with at least one other input value from inside the zone in the departure space designated as being valid”. As discussed before, Edirisinghe discloses that each pixel (image sample) inside the VOP is assigned (established) with a Boolean

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value of 1 and pixels (image samples) outside the VOP is assigned the Boolean value of 0 and shape (geometrical) information of VOP is **coded (composed)** using group of image samples (pixels) based on the established Boolean values and establishing these Boolean values will preserve shape and minimize prediction errors during image composing (coding) such that image pixels (samples) Boolean value 1 which corresponds to VOP will be considered valid and image samples (pixels) with Boolean value 0 which does not correspond to VOP will be considered invalid. Edirisinghe further discloses that there are some drawbacks of the MPEG-4 padding as described above which would result in some prediction errors at the boundary (page 516, left column, 2nd and 3rd paragraphs) and further provides two different types of padding (a) Linear extrapolation padding (LEP) and (b) Extrapolated average padding (EAP), **which would minimize the possible prediction errors at the boundary**. Edirisinghe further discloses under LEP, “we define all those exterior pixels that are immediately next to the boundary pixels in that row, as **projected pixels**” (page 516, right column, 2nd paragraph) and further teaches “For projected pixels where $n=1$, which is shown by pixel D in figure 3, **the pixel value is taken as equal to the single interior pixel value**” (page 517, left column, 2nd last paragraph), thus teaching the limitation “**by replacing the input values designated a being invalid with at least one other input value from inside the zone in the departure space designated as being valid**”. Edirisinghe further discloses under EAP, “firstly, the arithmetic mean value (A) of all the pixels of the boundary macro-block situated in the interior of the VOP” (equation 6) and then assign A to each block pixel situated outside the object region”, **thus replacing the outside (or invalid) pixels with the value of the inside (valid) pixels**.

Edirisinghe further discloses in further continuation of previous argument “In subsequent processing step, only the motion and texture information for the macro-blocks belonging to the VOP image are coded. These include the interior (standard) macro-blocks as well as the boundary

(contour) macro-blocks" (page 514, right col., last para.). From the above disclosure it is clear that MPEG-4 motion and texture coding (composing) is done after the shape coding is done.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to combine the methods of Miro and Edirisinghe. One would have been motivated to use Miro's method of inverse geometrical transformation of the image as the first step and further adding additional steps as disclosed by Edirisinghe, to compose the image because both references, as explained before, direct their inventions towards MPEG-4 coding (as also done by the applicant in the specification (page 1, first para.)) and Miro provides the image recovery in departure space by inverse geometrical transformation (such as done by the applicant) and Edirisinghe's method will help in preserving shape of the object in the image (as done by applicant (page 9, lines 31-32)), if any, when image is coded or composed back to the arrival space by minimizing the prediction errors and improving compression or MPEG-4 coding (See Edirisinghe, abstract, lines 10-12; page 515, left col., para. 2, figure 2) and further this would allow the system to recognize and control the image data to be used during image coding (composing) for preserving the shape of image object, thus providing better results. Also, applicant in the specification recites the use of Boolean values to define the shape of visual object (page 9, lines 31-32) same as done by Edirisinghe.

Claim 2 has been analyzed and rejected as per claim 1. Claim 2 recites a device, which comprises of method steps of claim 1, and is thus met by the combination of Miro and Edirisinghe as applied to claim 1 above.

Claim 3 has been analyzed and rejected as per claim 1. Claim 3 recites a computer program, which comprises of method steps of claim 1, and is thus met by the combination of Miro and

Edirisinghe as applied to claim 1 above. Miro discloses of program code to be written for the operation in lines 1-3 of page 10. Edirisinghe discloses the method steps to be an algorithm in last paragraph of column 2 of page 6, and apparently an algorithm can be used as software program.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. **Claim 3** is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claim 3 is drawn to functional descriptive material NOT claimed as residing on a **computer readable medium**. MPEP 2106.IV.B.1(a) (Functional Descriptive Material) states:

“Data structures not claimed as embodied in a computer-readable medium are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer.”

“Such claimed data structures do not define any structural or functional interrelationships between the data structure and other claimed aspects of the invention which permit the data structure’s functionality to be realized.”

Claim 3, while defining a “computer program” per se., does not define a “computer-readable medium” on which the program resides and is thus non-statutory for that reasons. A “computer program” is an abstract idea, and not a tangible thing. The examiner suggests amending the claim to embody the program on “computer-readable medium” in order to make the claim statutory.

“In contrast, a claimed computer-readable medium encoded with the data structure defines structural and functional interrelationships between the data structure and the computer software and hardware components which permit the data structure’s functionality to be realized, and is thus statutory.” - MPEP 2106.IV.B.1(a)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manav Seth whose telephone number is (571) 272-7456. The examiner can normally be reached on Monday to Friday from 8:30 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system,

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see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ms

Manav Seth
Art Unit 2625
November 01, 2005


KANUBHAI PATEL
PRIMARY EXAMINER